

REMARKS

Claims 1-4, 12, 15 and 17 have been amended. Claim 18 has been added. Claims 1-4, 8, 9 and 12-18 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

1. The specification currently stands objected to.

Claims 1-4, 8-9 and 12-17 have been amended to comply with 35 U.S.C. §112, second paragraph.

2. Claims 1-4, 8-9 and 12-17 currently stand rejected as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4, 8-9 and 12-17 have been amended to comply with 35 U.S.C. §112, second paragraph.

3. Claims 1-4, 6, 8, 10 and 12-17 currently stand rejected for allegedly being anticipated by U.S. Patent 6,543,569 to Shimizu (hereinafter “Shimizu”).

CLAIM 1

Amended claim 1 recites a worm gear mechanism for a power-assisted automobile steering mechanism. The worm gear mechanism includes:

“a rotatable cylindrical worm having a plurality of worm teeth that rotate about a first axis, each of the plurality of worm teeth having a first tooth face which includes a first convex region and a first concave region; and

a rotatable cylindrical worm gear having a plurality of worm gear teeth that rotate about a second axis, each of the plurality of worm gear teeth having a second tooth face which includes a second concave region and a second convex region;

where the first axis and the second axis are substantially perpendicular;

where the rotatable cylindrical worm and the rotatable cylindrical worm gear mesh together in a first configuration such that the first tooth face and the second tooth face define a linear contact along one of a plurality of portions of a linear contact region that extends between a base of the worm gear tooth and a tip of the worm gear tooth.” (cl. 1, emphasis added).

In contrast, Shimizu teaches, as illustrated in FIG. 8D, that “...*circular arc tooth profile gears are gears in which the addendum in one of a pair of gears is on an arc of which the center is substantially reference pitch line P_i , and the dedendum of the other gear in the pair is on an arc of which the center is substantially reference pitch line P_i . Gears with a circular arc tooth profile can have a symmetrical or asymmetrical tooth profile.*” (col. 13, lines 1-7). According to a fair and proper reading of Shimizu, assuming the rack 134 was substituted for the worm wheel 113 in FIG. 5, the area of the line of contact between the pinion 133 and the worm wheel 113 would be large in a dead on position (see Exhibit 1 below), where the convex surface of the worm wheel 113 fit into the concave surface of the pinion 133. (col. 13, lines 37-48).

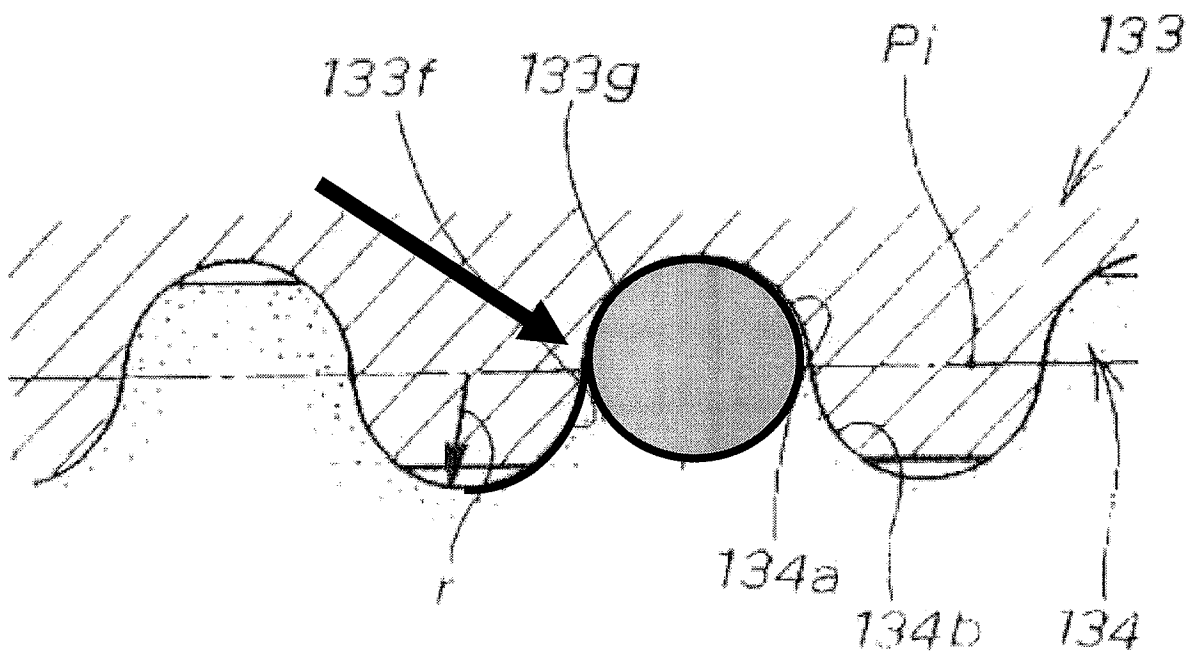


Exhibit 1 – Line of Contact

However, as soon as a tooth of the worm wheel 113 began to rotate away from the dead on position, the convex surface of the worm wheel 113 would form a point contact with either the transition between the concaved and convex surface of the pinion 133 or the convex surface of the pinion 133. (see Exhibit 2 below)

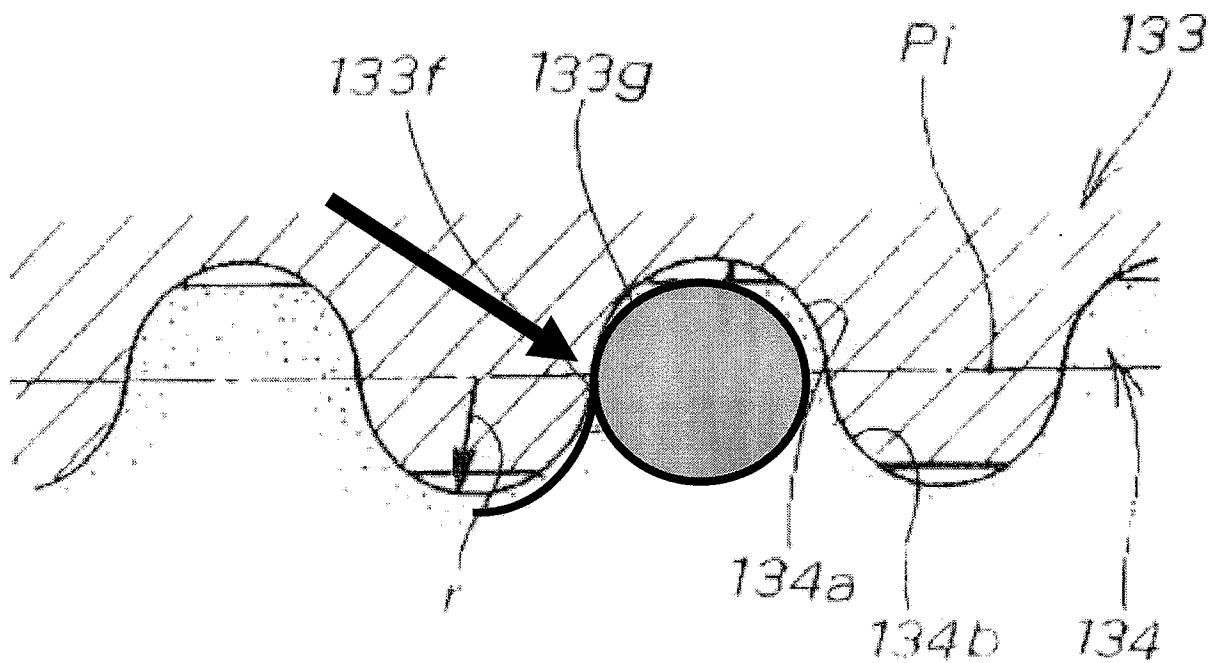


Exhibit 2 – Point Contact

That is, the worm wheel 113 and the pinion 133 only define the line of contact in one position, the dead on position. Therefore, Shimizu fails to teach the feature of “*where the rotatable cylindrical worm and the rotatable cylindrical worm gear mesh together in a first configuration such that the first tooth face and the second tooth face define a linear contact along one of a plurality of portions of a linear contact region that extends between a base of the worm gear tooth and a tip of the worm gear tooth....*” (cl. 1, emphasis added).

A 35 U.S.C. §102(e) rejection requires a single prior art reference that discloses each feature of the claimed invention. As a result, it is respectfully submitted that Shimizu is incapable of anticipating claim 1.

CLAIMS 15 AND 17

It is respectfully submitted that claims 15 and 17 are patentable for at least the reasons as set forth above with respect to claim 1.

CLAIMS 2-4, 8-9, 12-14 AND 16

It is respectfully submitted that these rejections are now moot since claims 1 and 15 are patentable for at least the reasons set forth above.

4. Claim 9 currently stands rejected for allegedly being obvious in view of the combined subject matter disclosed in Shimizu and U.S. Patent 2,760,381 to Pickles (hereinafter "Pickles").

It is respectfully submitted that this rejection is now moot since claim 1 is patentable for at least the reasons set forth above.

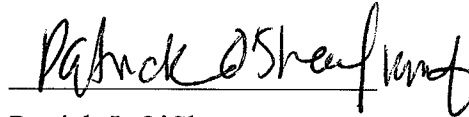
4. Claim 11 currently stands rejected for allegedly being obvious in view of the combined subject matter disclosed in Shimizu, Pickles and U.S. Patent 2,279,414 to Scott (hereinafter "Scott").

It is respectfully submitted that this rejection is now moot since claim 1 is patentable for at least the reasons set forth above.

For all the foregoing reasons, reconsideration and allowance of claims 1-4, 8, 9 and 12-18 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, reading "Patrick O'Shea", written over a horizontal line.

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